

REMARKS

Claims 1-10, 12-14 and 16-32 are pending in the application.

Claims 13, 31 and 32 are withdrawn from consideration.

Claims 18-21 are allowed.

Claims 1-9, 12, 14, 16 and 22-30 are rejected.

Claim 10 is objected to.

Claims 1-6, 12, 14, 16, 17 and 22-28 are rejected under 35 U.S.C. § 102(b).

Claims 22, 26, and 27 are rejected under 35 U.S.C. § 102(b).

Claims 7-9 are rejected under 35 U.S.C. § 103(a).

Claims 22-32 are canceled.

Claims 33-37 are added.

No new matter is added.

Claims 1-10, 12-14, 16-21, and 33-37 remain in the case for consideration.

Applicant requests reconsideration and allowance of the claims in light of the above amendments and following remarks.

Election Restriction

The Applicants acknowledge the constructive election made by the Examiner withdrawing claim 13 in a previous Office Action. However, the Applicants maintain that claim 12 is inherently generic over claim 13 since claim 13 depends on claim 12 and merely claims additional features to those of claim 12. It makes little sense to file and examine a divisional application for subject matter that is dependent on allowed independent claims. Thus, whether or not the Applicants traversed the constructive election of claim 13, the Applicants contend that the reasonable policy dictates that claim 13 be rejoined with the application if claim 12 is found allowable.

In the Specification

The specification is objected to for failing to provide proper antecedent basis for the claimed subject matter. In particular, it is alleged that there is not proper antecedent basis for the term “clamp” as recited in claims 22-30.

Claims 22-30 have been canceled; thus rendering this objection moot.

In the Claims

Claim Rejections – 35 U.S.C. §102

Claims 1-6, 12, 14, 16, 17 and 22-28

Claims 1-6, 12, 14, 16, 17 and 22-28 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat No. 4,552,206 to Johnson, et al.

The Applicants respectfully traverse these rejections.

In order for a single prior art reference to anticipate a claim, the reference must teach each and every element recited in the claim (*see* M.P.E.P. § 2131). Applicants respectfully submit that Johnson does not teach each and every element of any of claims 1-6, 12, 14, 16, and 17 for at least the reasons set forth below.

Claim 1 is directed to an apparatus comprising:

- two heat exchange members configured to be placed on both sides of a semiconductor module, the **semiconductor module including a plurality of packages;**
- a connection member between the two heat exchange members configured to movably join the two heat exchange members, wherein portions of the two heat exchange members are configured to protrude above the semiconductor module; and
- a biasing member disposed between the two heat exchange members and configured to provide a force that holds **the two heat exchange members against the packages of the semiconductor module.**

In particular, the apparatus of claim 1 includes two heat exchange members configured to be placed on both sides of a semiconductor modules that includes a plurality of packages and a biasing member disposed between the two heat exchange members to hold the members against the packages of the semiconductor module.

In contrast, Johnson teaches sheet-metal heat-sinking arrangement 6 that fits over a single dual-in-line package (DIP). This single package does not include a plurality of packages surrounded on both sides by heat exchange members that are held in place by a biasing member. Rather, the DIP is a unitary device or package.

In addition, the Applicants note that elements 6A' and 6A'' (which are alleged in the Office Action as being heat exchange member portions protruding above the semiconductor module [page 3]) are guide members downwardly attached only to member 6A "to form a shallow channel for guidance of the module as it is being inserted and for improved lateral holding and centering of the module once it is in place." See col. 4, lines 20-26. Thus, these elements do not properly teach "portions of the two heat exchange members configured to

protrude above the semiconductor module” because elements 6A’ and 6A’’ are only part of one of the heat exchange members and they are configured to overlap the module (rather than protruding above the module) to guide and secure it.

Accordingly, Johnson does not teach each and every element of claim 1. Hence, because Johnson does not teach each and every element of claim 1, Johnson cannot anticipate claim 1. As such, the Applicants submit that claim 1 is in proper form for allowance and request that the rejection under § 102 be removed.

Claims 2-6 depend from claim 1. Based at least in part on their dependency, the Applicants submit that claims 2-6 are likewise in proper form for allowance.

Claim 12 is directed to an apparatus comprising:

- a first heat exchange member including a first contacting portion**, the first contacting portion configured to contact a surface of a semiconductor module to absorb heat generated by the semiconductor module, **and a first heat dissipating portion**, which is thermally connected to the first contacting portion to dissipate the heat absorbed by the first contacting portion;
- a second heat exchange member including a second contacting portion**, the second contacting portion configured to contact another surface of the semiconductor module to absorb the heat generated by the semiconductor module, **and a second heat dissipating portion**, which is thermally connected to the second contacting portion to dissipate the heat absorbed by the second contacting portion; and
- an elastic member structured to provide a force that draws the first and second contacting portions toward each other.

In particular, the apparatus of claim 12 includes first and second heat exchange members that respectively include first and second contacting portions, and first and second heat dissipating portions.

In contrast, Johnson does not teach first and second heat exchange members as claimed above. In the Office Action it is alleged that flat parallel members 6A and 6B of Johnson teach the first and second heat exchange members. While these members appear to include portions that contact DIP 7, neither member appears to include a heat dissipating portion thermally connected to the corresponding contact portion to dissipate the heat absorbed by the contact portions. Rather, each of the flat parallel members 6A and 6B are thermally connected to a common heat radiating element 6C that includes fins 6D. This configuration of Johnson is clearly illustrated in Fig. 2 of Johnson, as well as stated multiple times in col. 3, line 58 – col. 4, line 65 (see e.g., col. 4, lines 52-54: “Heat dissipation from the unit is effected mainly by

convective cooling achieved by intermediate member 6C”). As each and every element must be taught by a reference for anticipation to be proper, Johnson cannot properly anticipate claim 12. As such, the Applicants submit that claim 12 is in proper form for allowance and request that the rejection under § 102 be removed.

Claim 14 depends from claim 12. Based at least in part on its dependency, the Applicants submit that claim 14 is likewise in proper form for allowance.

Claim 16 includes similar elements to those discussed above with respect to claim 14. In addition, the Applicants note that elements 6A’ and 6A’’ (which are alleged in the Office Action as being heat exchange member portions protruding above the semiconductor module [page 3]) are guide members downwardly attached only to member 6A “to form a shallow channel for guidance of the module as it is being inserted and for improved lateral holding and centering of the module once it is in place.” See col. 4, lines 20-26. Thus, based on the above discussions, the Applicants submit that Johnson does not properly anticipate claim 16, and that claim 16 is in proper form for allowance.

Claim 17 depends from claim 16. Based at least in part on its dependency, the Applicants submit that claim 17 is likewise in proper form for allowance.

Claims 22-28 have been canceled; thus rendering these rejections moot.

Claims 22, 26, and 27

Claims 22, 26, and 27 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat No. 5,099,550 to Beane, et al.

Claims 22, 26, and 27 have been canceled; thus rendering these rejections moot.

Claims 22, 23, 26, 29, and 30

Claims 22, 23, 26, 29, and 30 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Pat No. 6,687,344 to Ross, et al.

Claims 22, 23, 26, 29, and 30 have been canceled; thus rendering these rejections moot.

Claim Rejections – 35 U.S.C. §103

Claims 7-9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat No. 4,552,206 to Johnson, et al.

Claims 7-9 depend from claim 1. As discussed above Johnson does not teach each and every element of claim 1. Thus, based at least in part on their dependence, the Applicants submit that claims 7-9 are likewise in proper form for allowance.

Allowable Subject Matter

The indicated allowability of claims 4, 5, 10 and 17 are hereby withdrawn in view of the newly discovered reference to Johnson, et al. Rejections based on the newly cited reference above.

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim sand any intervening claims.

Claims 18-21 are allowed.

The Applicants thank the Examiner for acknowledging the patentable subject matter of these claims.

New Claims

Claims 33-37 have been added to the application. Support for these claims can be found at, for example, Figs. 2-6 and page 4, line 24 – page 8, line 19.

Conclusion

For the foregoing reasons, reconsideration and allowance of claims 1-10, 12, 14 and 16-21, and 33-37 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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